

Europäisches Patentamt  
European Patent Office

Office européen des brevets



(11)

**EP 0 943 772 A2**

(12)

**EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
22.09.1999 Bulletin 1999/38

(51) Int Cl.<sup>6</sup>: **E05D 15/06**

(21) Application number: **99500036.1**

(22) Date of filing: **05.03.1999**

(84) Designated Contracting States:  
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE**  
Designated Extension States:  
**AL LT LV MK RO SI**

(72) Inventor: **Tarrega Lloret, Miguel Angel**  
**08017 Barcelona (ES)**

(74) Representative: **Davila Baz, Angel**  
**c/o Clarke, Modet & Co.,**  
**Avda. de los Encuartes 21**  
**28760 Tres Cantos (Madrid) (ES)**

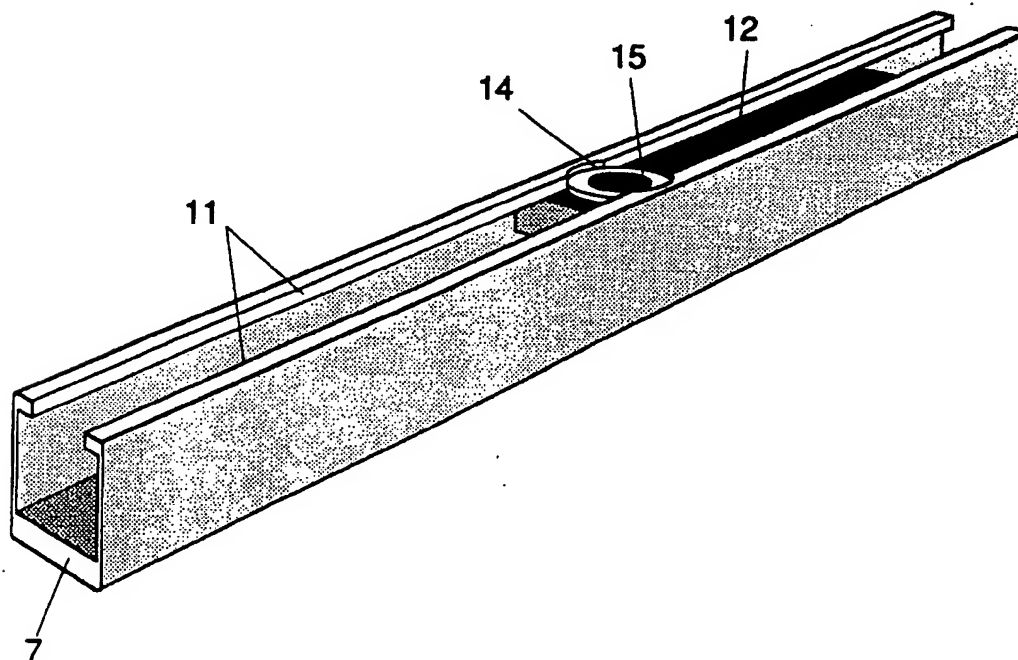
(30) Priority: **06.03.1998 ES 9800481**

(71) Applicant: **KLEIN IBERICA, S.A.**  
**E-08024 Barcelona (ES)**

(54) **Structure for mounting sliding doors**

(57) Structure for mounting sliding doors, consisting of an upper rail (1) along which may move carriages (2) from which hang the doors (4) by intermediate support elements consisting of a U-bar (7) embedded in the door (4) from its upper edge, and of a Z-shaped part (12)

which may slide inside this U-bar. The U-bar (7), from its longitudinal edge of the flaps (11) which partially close it, has arched opposing notches (14) which are sized to receive a ring (15) through which passes the screw (13) anchoring it to the upper carriage (2).



**Fig. 3**

**EP 0 943 772 A2**

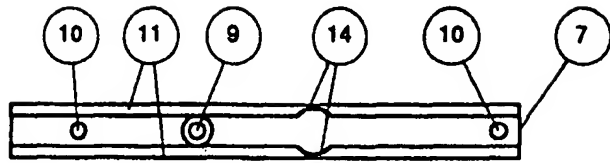


Fig. 4

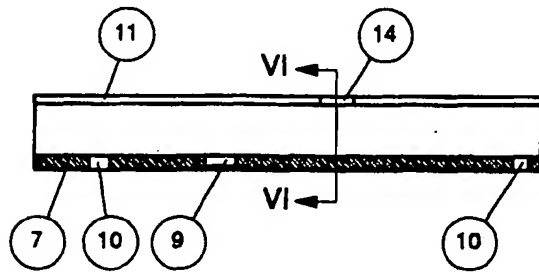


Fig. 5

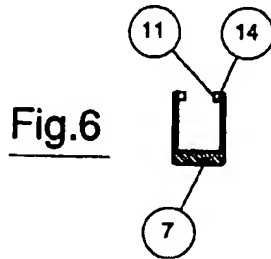


Fig. 6

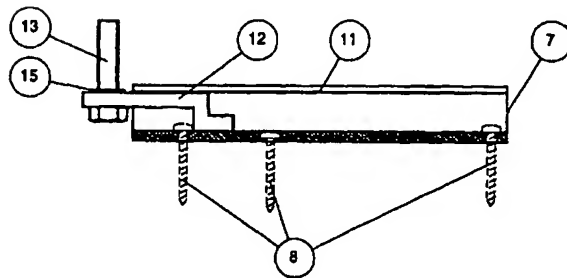


Fig. 7

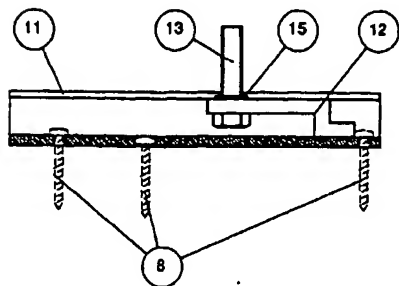


Fig. 8

## Description

[0001] The present invention refers to improvements in invention patent no. 9501409 regarding a structure for mounting sliding doors, particularly sliding doors used in closing spaces for cupboards and the like.

[0002] The structure described in patent no. 9501409 comprises an upper tubular support rail and a lower guide. The bottom of the upper rail is open longitudinally with a groove that is limited on the inside by tracks along which may slide moving carriages inside the rail. From these carriages hang the doors by intermediate support elements which consist of a U-bar, occluded in the door from its upper edge, and of a Z-shaped part which can slide inside said bar. The U-bar which makes up the intermediate support element is partially closed by opposed inner flaps. The Z-shaped part which may slide inside the U-bar has on one of its ends an orifice for the screw or bolt to attach the movable carriages.

[0003] For the correct operation of the structure it is desirable that the Z-shaped part in the intermediate support element remains inside the U-bar of said element once the set is assembled.

[0004] However, under certain conditions, such as when the doors are not very heavy, it may be that as the doors slide the Z-shaped part moves inside the U-bar until it is partially projecting out, along the branch crossed by the support screw or bolt to the movable carriages, thus leaving the head of this screw or bolt outside the U-bar. This situation could cause noises as the Z-shaped part moves, and mainly misadjustment of the screw or bolt to the carriage, with the negative effects which this would have on the operation of the door, forcing a new adjustment operation.

[0005] The object of the present invention is to eliminate the problems mentioned by a special arrangement of the intermediate support element, by which once the set is assembled and adjusted, the Z-shaped part in the intermediate support element is locked inside the U-bar. Thus the risk of the Z-shaped part sliding during opening or closing of the doors is eliminated.

[0006] The special arrangement of the intermediate support element will nevertheless allow freeing the Z-shaped part whenever desired in order to carry out adjustments, maintenance, etc.

[0007] According to the present invention, the U-bar of the intermediate support element, from its longitudinal edge free of the two flaps which partially close the opening of this bar, and level with the position of the screw or bolt anchoring the Z-shaped bar in the door use position, has arched opposing notches which are sized to receive a ring mounted around the screw or bolt anchoring the Z-shaped part to the carriage, this ring being of an external diameter greater than the distance between the longitudinal edges of the flaps which partially close the U-bar. In addition, this ring may slide freely on the screw or bolt.

[0008] With this arrangement, once the length of the

screw or bolt anchoring the Z-shaped part to the carriage is adjusted, the ring is raised or lowered on said screw or bolt, so that it is left above or below the longitudinal flaps which partially close the opening of the U-bar. In this situation the Z-shaped part may slide freely inside the U-bar until it reaches the desired position, which will be that of the opposed arched notches of the U-bar flaps, at which time the ring may move on the screw or bolt until it rests between said notches. In this position the screw or bolt anchoring the Z-shaped part to the carriage is locked in place with respect to the U-bar, thus locking the position of the Z-shaped part.

[0009] The characteristics and advantages set forth will be understood better with the following description, made with reference to the attached drawings, in which an example is shown of a non-limiting embodiment.

[0010] In the drawings:

[0011] Figure 1 is a longitudinal cross section of a structure for mounting sliding doors, in accordance with patent 9501409.

[0012] Figure 2 is a side view of the same structure.

[0013] Figure 3 is a perspective view of the intermediate support element according to the invention.

[0014] Figure 4 is a top view of the U-bar of the intermediate support element.

[0015] Figure 5 is a longitudinal cross section of the U-bar of figure 4.

[0016] Figure 6 is a transversal cross section of the same bar, along the VI-VI line of figure 5.

[0017] Figures 7 and 8 are longitudinal sections of the intermediate support element of the invention, with the Z-shaped part in an external adjustment and an internal operation position.

[0018] The structure shown in figures 1 and 2 consists of a support rail 1, of tubular construction, open along its lower side in a groove on both sides of which are inner tracks on which carriages 2 may travel, from which hang doors 4 by intermediate support elements 3. Inside rail 1 are mounted retainers 5 for carriages 2. Door 4 is carried from below by a guide 6.

[0019] The intermediate support element 3 consists of a U-bar, shown in figures 4 to 6, labeled by number 7, which as can best be seen in figure 2, is embedded in door 4 from the upper edge of said door, and is attached by screws 8, figures 7 and 8, which can be introduced through orifices 9 and 10 made in the bottom of bar 7.

[0020] Bar 7 is partially closed by longitudinal flaps 11.

[0021] Inside U-bar 7 is a Z-shaped part 12 which may move along the bar. One arm of the Z-shaped part has an orifice in its end for a screw or bolt 13 to attach it to carriages 2. As can be seen in figures 5, 7 and 8, the central orifice 9 at the bottom of bar 7 is shaped to house the head of screw 8 for attaching the door, while the end orifices 10 allow the pin of the screw to pass but do not house its head, which shall project out inside the bar to be used as a stop in limiting the displacement of the Z-shaped part 12 along bar 7.

[0022] Figure 7 shows the Z-shaped part in an extreme position where it is partially projecting out of the bar, thus allowing it to act on the head of the anchoring screw or bolt 13, in order to adjust its height. Figure 8 shows piece 11 in its internal limit position corresponding to the position of operation of the door.

[0023] In order to lock this last position shown in figure 8, according to the invention, bar 7 has opposing arched notches 14 from the longitudinal edge of the flaps 11, placed in the position to be occupied by bolt 13 in operation of the door.

[0024] Above the anchoring bolt or screw 13 is mounted a ring or washer 15 which may move freely on said screw and is of a diameter greater than the distance between the longitudinal cuts of flaps 11 of bar 7, and equal to or slightly smaller than the diameter of the outline defined by notches 14.

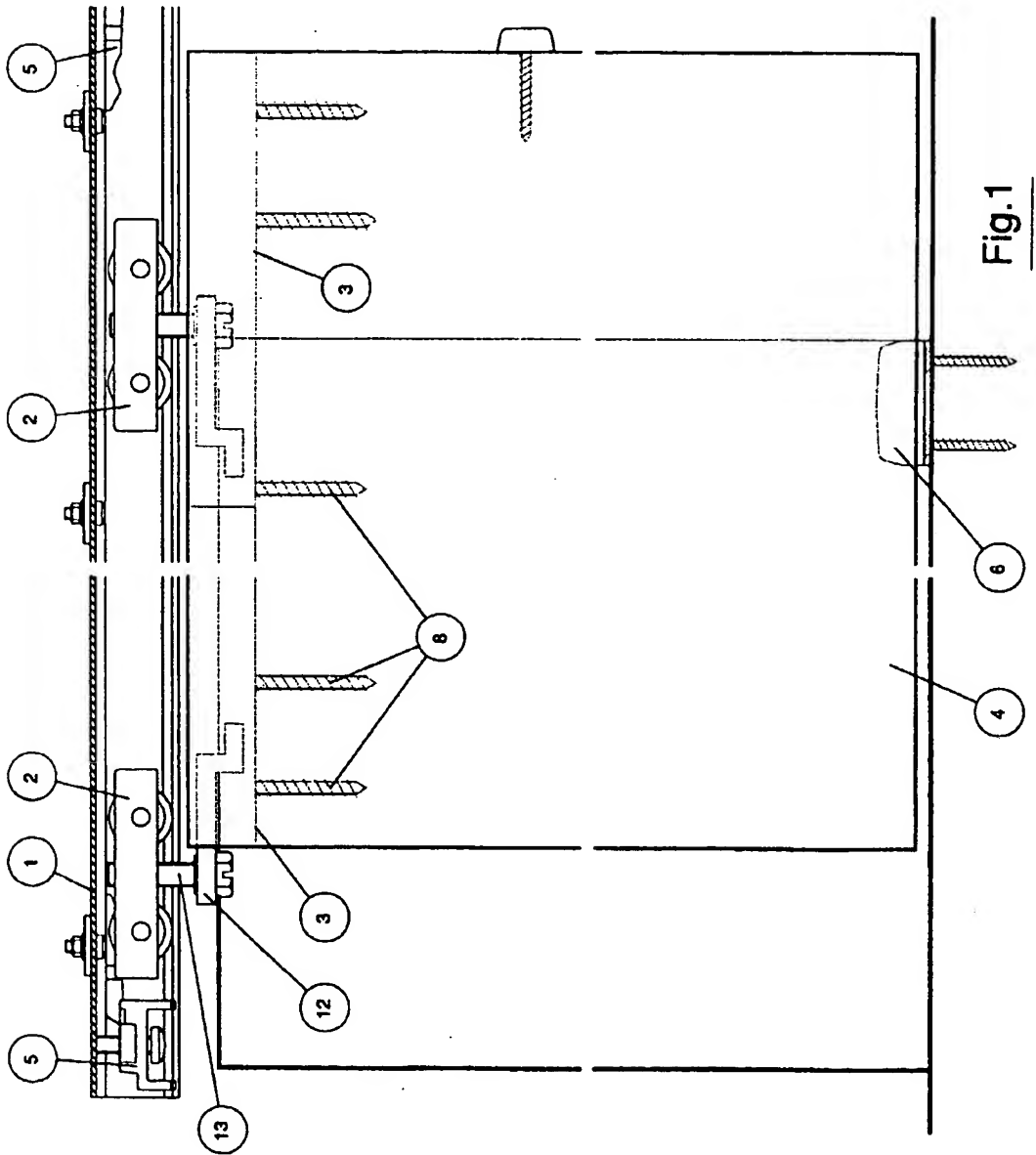
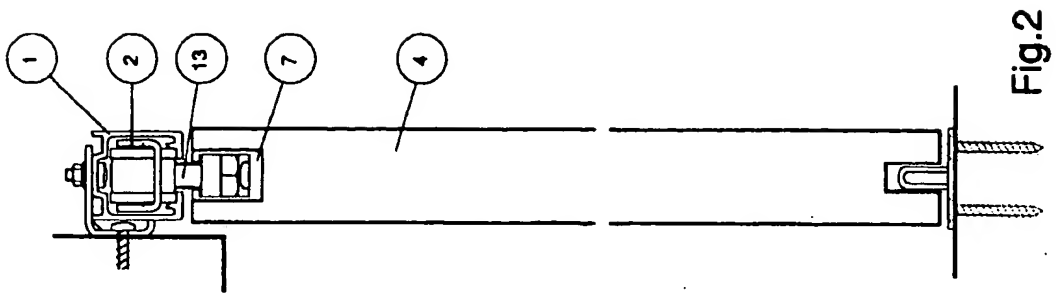
[0025] With the arrangement described, once the height of screw 13 has been adjusted for a correct positioning of the door, ring or washer 15 is moved upwards or downwards so that it is above or below the flaps 11 of bar 7. In this situation Z-shaped part 11 can move into the bar 7, until the position shown in figure 8 is reached, at which time ring or washer 15 is placed between notches 14, thus locking part 12 preventing any longitudinal motion.

[0026] By correct sizing of notches 14 and the diameter and thickness of ring or washer 15, the position of figure 8 is ascertained. When the Z-shaped part 12 has to be removed to make adjustments or for maintenance, it is enough to lift the leaf of the corresponding end for the washer to be placed under flaps 11, thus freeing Z-shaped part 12 to move into the extracted position of figure 7.

diameter greater than the distance between the free longitudinal edges of said flaps (11), ring (15) being mounted around the screw or bolt (13) and free to move on it.

## Claims

1. Structure for mounting sliding doors, which consists of at least one support tubular rail (1) which is open longitudinally along the bottom, defining inner longitudinal tracks on which may move carriages (2), from which hang doors (4) by intermediate support elements (3), these elements consisting of a U-bar (7) which is embedded in door (4) from its upper edge, and of a Z-shaped part (12) which can slide inside the U-bar (7), this U-bar being partially closed longitudinally by inner opposing flaps (11), and Z-shaped part (12) having in one of its end arms an orifice for a screw or bolt (13) anchoring the movable carriages (2), characterised in that the U-bar (7) of the intermediate support element (3), from its longitudinal edge free of the two flaps (11) which partially close the opening of this bar, and level with the position of the screw or bolt (13) anchoring the Z-shaped part (12) to carriage (2) in the door (4) operation position, has arched opposing notches (14) which are sized to receive a ring (15) of an external



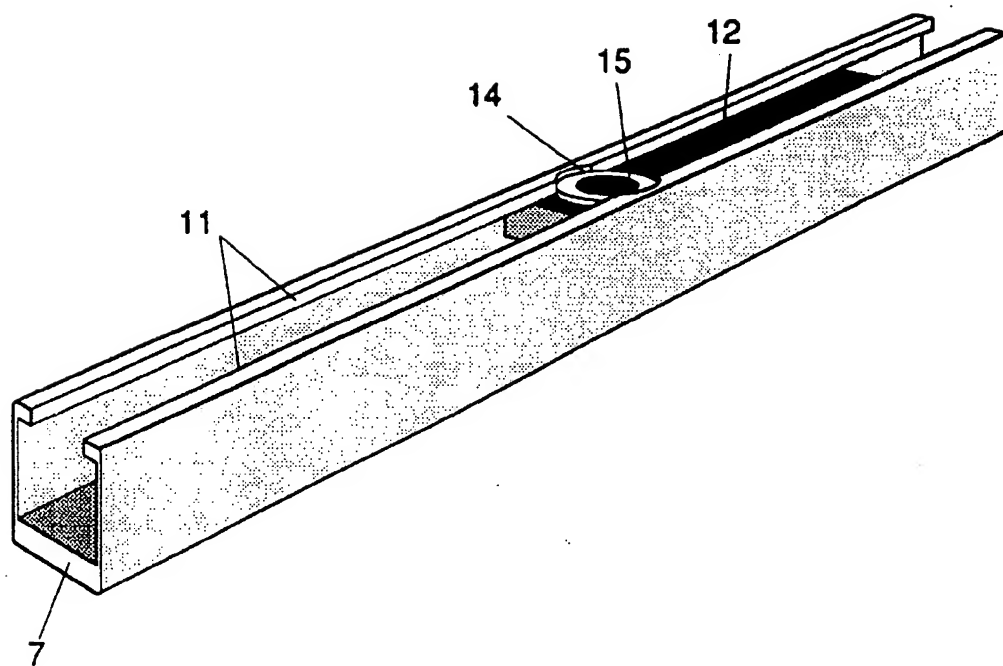


Fig. 3

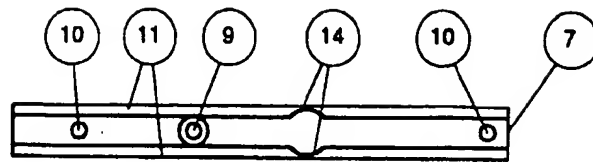


Fig.4

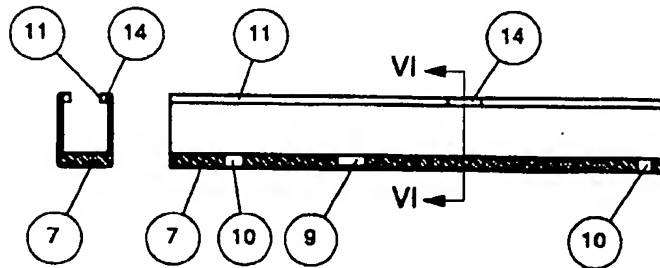


Fig.5

Fig.6

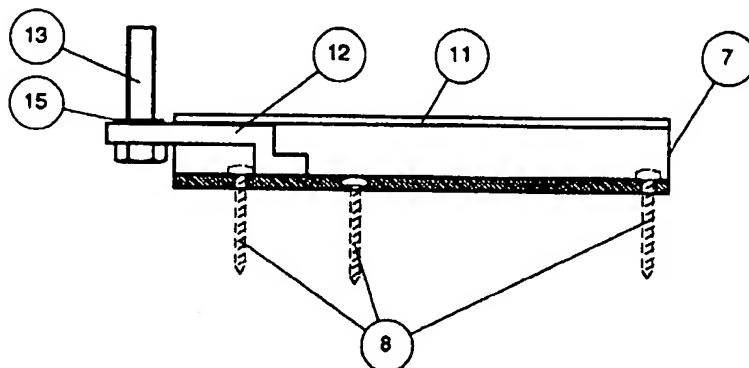


Fig.7

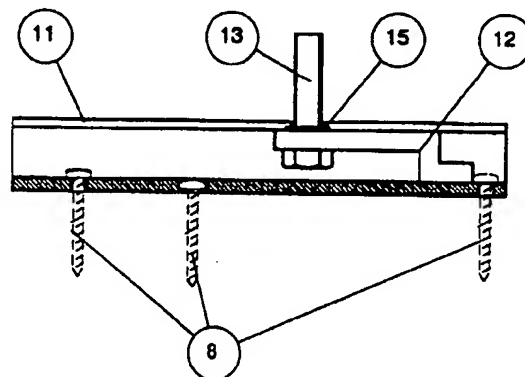


Fig.8